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(54) Method and apparatus for providing a service pool of virtual machines for a plurality of VM users.

⑦ A system for providing a service pool of virtual machines (12 - 18) to a plurality of system virtual machine users (20). A host processor (10) creates through a control program (CP) a pool of virtual machines. A firmware configured AVS gateway is connected over an SNA to a plurality of work stations (20). A request from a work station is assigned to one of the service pool machines based on the specific transaction being completed. The ID of the requesting work station is assigned to the selected virtual machine. The assigned virtual machine completes its transaction with the work station and is then free to service other requests.

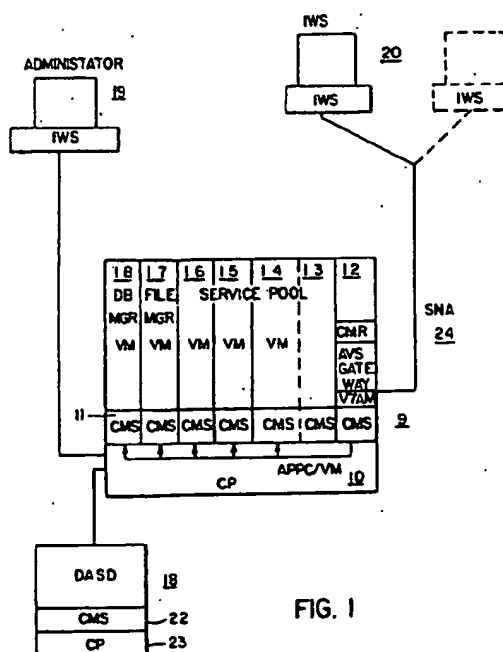


FIG. 1

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The present invention relates to the enhancement of virtual machine system product operating systems. Specifically, a pool of virtual machines are provided, each machine pre-initialized for a given application such that a plurality of independent work stations may access the individualized virtual machine, depending on the application requirements of the independent work station.

In normal virtual machine system products, a single independent work station is assigned a specific virtual machine. Virtual machines are created by a control program (CP), operating in a large scale computer processing system. The control program divides the processing operations among a plurality of users, such that each user, connected through an independent work station, appears to have his own processor or virtual machine. Each independent work station has a user ID which is assigned to the virtual machine to run any particular application needed by the independent work station. Each work station has access to only one virtual machine for a given user ID.

The disadvantage of the current arrangements of independent work stations for use in a virtual machine environment relates to the fact that each work station ID is assigned to a particular virtual machine. To initiate any concurrent work by the processor forming the virtual machines, the user must have access to more than one virtual machine. However, the virtual machines have different user IDs and corresponding differences in user authorization. Therefore, for a specific individual work station to run two jobs concurrently, two virtual machines would have to be authorized with two different identification numbers. Alternatively, two separate applications could be concurrently executed in one virtual machine using multitasking. However, multitasking is not easy to implement and is certainly more expensive than is probably warranted in terms of consumption of processor time.

Thus, the foregoing limitations render it inefficient to execute different types of applications from the same work station. This imposes a certain inflexibility on the use of virtual machines.

It is an object of this invention to permit a plurality of independent work stations to use more than one virtual machine for executing different application programs.

It is a specific object of this invention to provide for a pool of service machines, a number of such service machines being pre-initialized to handle a specific application from any independent work station.

It is yet another object of this invention to provide a gateway between a processor supporting a plurality of VM machines, and each of a plurality of independent work stations which permits the assignment of one of the service pool virtual ma-

chines to a requesting independent work station.

These and other objects of the invention are provided by a system which permits a plurality of independent work stations to access more than one virtual machine. The independent work stations are connected over a SNA via a VTAM interface, in a preferred embodiment, to the processing system supporting the virtual machines. A pool of such virtual machines is set up in the processor by the system administrator. Each of the virtual machines constituting the pool may be pre-initialized to run a specific program for any connected independent work station.

In carrying out the invention of permitting more than one independent work station to access one of the pre-initialized virtual machines, an AVS gateway is configured in the virtual machine which will select one of the virtual machines for assignment to a requesting independent work station. The assignment process requires that an alternate identification number be assigned to a virtual machine, corresponding to a requesting independent work station identification number. Once the assignment is made, a communication session may be set up by the gateway and a related conversation management routine, between the newly-assigned virtual machine and a connected independent work station.

Since the AVS gateway has the ability to assign a pre-initialized virtual machine to a requesting independent work station, more than one independent work station may access the virtual machine. Each time a new independent work station requests access to a machine for executing a specific application, the AVS gateway will make a new assignment of an alternate identification number to the pre-initialized virtual machine, corresponding to the identification number of the subsequently requesting independent work station.

Description of the Figures

- Fig. 1 Illustrates a virtual machine complex 9 having associated therewith an administrator 19 and a plurality of independent work stations 20.
- Fig. 2 illustrates the configuration by the administrator of the virtual machine complex 9.
- Fig. 3 illustrates the sequence of events for establishing a communication between an independent work station and a service pool of virtual machines.

Referring now to Fig. 1, there is shown a virtual machine complex 9. The virtual machine complex 9 comprises a central processor having a control program 10, which partitions the processor into a plurality of virtual machines. Associated with each